

played baseball and football. In later years for recreation he enjoyed golf and bridge. He was married in Cedar Rapids, Sept. 22, 1903, to Grace Charlotte, daughter of Henry Evans Witwer of that place, a wholesale grocer, and had two daughters: Harriet Witwer, who married Harry Brecht Graefe; and Mary Elizabeth, who married George Frederick Karch. Amor H. Sargent's death occurred in Cleveland, Ohio, Feb. 18, 1968.

**HANSELL, Clarence Weston**, engineer, was born in Pulaski County, Ind., Jan. 20, 1898, son of George William and Bessie Elva (Engle) Hansell. His first paternal American ancestor was Johan Lorentz la Hanzell, who came to this country from Germany in 1739. From him the line of descent was through Michael L. and Anna Catherine (—) Hensel, George and Barbara (—) Hensel, John and Hannah (Adams) Hansell, George William and Mary Ann (Wilkinson) Hansell, and Elijah Cooper and Mary Ann (Aldridge) Hansell, the grandparents of Clarence W. Hansell. His father was a public official. The son received his preliminary education at public schools in White Post Township, Pulaski Co., Ind., and Medaryville, Ind., and was graduated B.S. in E.E. in 1919 at Purdue University. Additionally, he engaged in postgraduate study at Union College, Schenectady, N.Y., in 1920. In the meantime, during 1911-15 he worked summer vacations on Indiana farms, and in the summer of 1917 he was a lathe operator on the night shift at the Ross Gear & Tool Co., Lafayette, Ind. The following year he attended an operations training course given by the Commonwealth Edison Co., Chicago, Ill., and in the fall, during the First World War, he was in the Students' Army Training Corps at Purdue University. After graduation at Purdue he was employed until 1920 as a test man in a training course given by the General Electric Co., Schenectady. He then was transferred to the radio engineering department of General Electric, and later in 1920 he joined the engineering department of the newly formed Radio Corporation of America in New York City as a radio engineer. He continued there until 1923, after which he was director of a design group on shortwave transmitters with RCA Communications, Inc., Rocky Point, N.Y., where from 1923 until his retirement in 1963 he was head of the technical staff of the transmitter laboratory of RCA Laboratories. In 1918 he commenced to spend part of his time at the David Sarnoff Research Center of RCA Laboratories, Princeton, N.J., and from 1960 to 1963 he was a full-time research fellow there, studying air ionization and medical climatology. After joining the General Electric Co. in 1919, Hansell was engaged in production testing of a variety of electrical machines and was an assistant in research into resonances in steam-turbine wheels, oil-film pressures between surfaces of large bearings in electrical generators, and industrial applications of vacuum-tube, oxide-coated cathodes for reduction in the effects of heater current on anode-to-cathode currents. The last-named application later was adopted as standard practice by the industry. During the latter part of his service in the test department, Hansell was assigned to organize facilities for, and carry out production adjustment and testing of, 200 KW Alexanderson high-frequency motor-generators. At the time these machines were considered the best equipment extant for transoceanic wireless telegraph communication. In 1919 the Radio Corporation of America was organized by General Electric to utilize the Alexanderson machines in establishing a worldwide wireless telegraph service for the United States. In 1920, after his transfer to the radio engineering department of the General Electric Co., Hansell worked under the supervision of Ernst F. W. Alexanderson, testing and placing in service the wireless transmitting stations in which the Alexanderson machines were used. He continued

in this work during 1920-23, after his transfer to RCA, and, in association with Walter R. G. Baker and William C. White of General Electric, he set up and demonstrated the first vacuum-tube transmitter ever used to handle commercial radio-telegraph traffic across the Atlantic Ocean. Subsequently, he represented RCA in a cooperative project with the American Telephone & Telegraph Co. and the Western Electric Co. to demonstrate the world's first commercial, high-power, single-sideband, radio-telephone transmitter. After a corresponding installation was made in England, this transmitter was used in providing the first transatlantic radio-telephone service, and it continued in commercial service for some thirty years. In 1923-24 Hansell was in Belfast, Maine, developing a system for relaying radio signals from Europe to Riverhead, N.Y., and from there to New York City by wire line. This involved a trial of frequencies above 3 million cycles per second, far higher than the frequencies then in commercial use. In the course of the work the task of stabilizing and controlling the transmitter frequency was solved by application of frequency control by piezo-electric quartz crystals. Subsequently, this technique was adopted on a worldwide basis and developed into a means which made possible the simultaneous operation of large numbers of transmitters. The work at Belfast marked the beginning of RCA's development of high-frequency radio communication, which rendered the Alexanderson machines obsolete by providing much more effective service at lower cost. In mid-1924 Hansell was assigned by RCA to gather all available information pertaining to high-frequency radio communication in the United States for presentation at a meeting of an American-English-French-German consortium for the development of radio communication with South America, and he was also assigned to plan a program of high-frequency radio transmitter development. He founded the transmission laboratory at Rocky Point for the purpose of developing high-frequency radio transmitters. In one of the first phases of development, a crystal-controlled radio transmitter was made to work at the unprecedentedly high frequency of 20 megacycles. It was discovered that this transmitter could be used to transmit over long distances in daytime, when service was needed most, whereas prior transmitters, working at lower frequencies, had been useful only at night. Service was quickly begun from New York City to Buenos Aires, Argentina, some 5000 miles, a distance at which the Alexanderson alternators were ineffective. Within a few years the high-frequency equipment developed at Rocky Point was adopted throughout the world. Subsequently, the Rocky Point laboratory and its companion receiving laboratory at Riverhead, N.Y., participated in numerous other projects and explored and sought to find uses for even higher frequencies. A radio telephone system linking the Hawaiian islands was established for the Mutual Telephone Company of Honolulu, and significant contributions were made to the development of frequency modulation (FM) radio broadcasting, television broadcasting, and microwave radio relaying. In the 1930's Hansell devised a new electrostatic generator and a transmitter of ultra-short radio waves capable of sending visual images through heavy fog. In 1933 he directed the construction and operation of an experimental television setup between New York City and Camden, N.J. He designed a large saucer-shaped television antenna placed atop the Empire State Building in New York City in 1939. During the Second World War the Rocky Point laboratory was engaged in developing military radio communications equipment, radio navigational systems, radar, and low-drag and flush-type antenna systems for high-speed military aircraft. In 1945 Hansell was an Institute of Radio Engineers research fellow and a member of a U.S. government technical industrial intelligence com-

mittee research team in Germany, where he investigated advances in infrared technology made by that country during the Second World War. In this capacity he discovered a device which enabled soldiers to aim their rifles at night, and another which made it possible for the Germans to photograph Allied military installations across the English Channel. During the postwar period the laboratory developed multichannel telephone terminals for radio-relay systems based upon time division channeling. Simple means were devised for elimination of crossties between channels even though there was a substantial overlap in channel pulses due to restriction of band widths for reduction of noise. A by-product of this work was a demonstration of a three-channel system for color television which could be introduced without disturbing service to existing monochrome receivers. This system, with some modifications, later became standard throughout the world. In general, Hansell's major contributions lay in the fields of relay systems, multiplexing, high-power transmitters, antennas and limiters, cathode tubes, FM radio broadcasting, and color television. He also contributed significantly to the use of microwaves, inventing several microwave devices, including the magnetron. He was the holder of some 400 U.S. patents as well as a number of foreign patents. In addition to his main research field, Hansell became interested in 1932 in air ionization and its biological effects, and until the close of his life he devoted himself to gathering all available information on the subject and to promoting interest and further research. His efforts in this direction were credited with helping to instigate the development of uses for artificially ionized air in therapeutics, air conditioning, animal husbandry, and horticulture. In 1961 Hansell served as general chairman of an international conference held at the Franklin Institute in Philadelphia, Pa., by the American Institute of Medical Climatology, an organization with the primary purpose of promoting and publicizing medicobiological research into the effects of air ionization. Hansell was also the holder of a patent for an ion-current measuring apparatus. He was the author of numerous papers on subjects related to his research, among them "Short-Wave Commercial Long Distance Communications" (with others, *Proc. Inst. Radio Eng.*, June 1927), "Application of Frequencies above 30,000 KC to Communications Problems" (with others, *ibid.*, Aug. 1931), "New Methods of Frequency Control Employing Long Lines" (with others, *ibid.*, Nov. 1931), "Resonant Lines for Frequency Control" (*Elect. Eng.*, Aug. 1935), "Radio Relay Systems Development" (*Proc. Nat. Elec. Conf.*, May 1945), and "Pulse Communication" (*Electronics*, June 1946). Active in civic affairs, from 1950 to 1958 Hansell was president of the Board of Education of the Union Free School District No. 6, Port Jefferson, N.Y., and during the last two years of this period served as chairman of the Port Jefferson Area Planning Commission. In 1940 he received the National Modern Pioneers joint award of the National Association of Manufacturers, and in 1952 an honorary D.E.E. degree was conferred upon him by Purdue University. A licensed professional engineer in New York, Hansell was a fellow of the Institute of Radio Engineers and the American Institute of Electrical Engineers and a member of the American Association for the Advancement of Science, American Radio Relay League, Franklin Institute, Electrochemical Society, Sigma Xi, and the Port Jefferson Yacht and Rotary clubs. His religious affiliation was with the Presbyterian church. Politically, he was a Republican. For recreation he enjoyed boating, gardening, and reading. He was married in Medaryville, May 1, 1923, to Mildred, daughter of Henry Lewis Madaus of that place, a farmer, and had three children: Mary Jane, who married George Kissel; George Erwin; and Patricia Ruth, who married Robert Sisler. Clarence W. Hansell died in Lakeland, Fla., Oct. 20, 1967.

ROTT, Reuben Paul, lawyer, was born in Gackle, N.Dak., Jan. 4, 1907, son of Fred and Katharina (Meidinger) Rott. His father was a banker and real estate man. Reuben P. Rott received his preliminary education at public schools in Lodi, Calif., and was graduated A.B. in 1929 and LL.B. in 1932 at Stanford University. Admitted to the California bar in 1933, from that year until the close of his life he practiced law in Lodi. Steward C. Adams, Jr., became his law associate in 1963 and in January, 1965, the two became partners under the firm style of Reuben P. Rott and Stewart C. Adams, Jr. His firm engaged in a general civil practice, including corporate, real property, and probate law, and its representative clients included the Farmers & Merchants Bank of Central California, North San Joaquin Water Conservation District, Lockeford Sanitary District, Mark Twain Hospital District, East Side Winery, Grain Growers Association of California, Mumbert Concrete Pipe Co., Rott Bros. Tractor Co., Victor Fruit Growers, Inc., Northern California Fruit Co., and the Tokay Cold Storage Co. At the time of his death he was attorney for and secretary of Multi-View Systems, Inc., which in 1968 was awarded the cable television franchise in Lodi. Additionally, from 1934 until 1950 Rott was general manager of the East Side Winery, Lodi, and at the time of his death he was a director and treasurer of the Farmers & Merchants Bank of Central California, Lodi. Active in civic affairs, Rott served as a member of the Lodi Library board of trustees and the board of directors of Lodi Memorial Hospital and for a time was a director of the Lodi Grape and Wine Festival. He also served at various times as a trustee and board president of the Lodi High School and as a trustee of the Lodi Elementary School. At the time of his death he served the Board for Exceptional Students at Stanford University and a member of the advisory board for the Stanford School of Law. He was a member of the American and San Joaquin County bar associations, State Bar of California, Delta Theta Phi, the Masonic order, BPOE, the Lodi Rotary Club, and the Woodbridge (Calif.) Golf and Country Club. In politics he was a Republican. For recreation he enjoyed golf. He was married in Palo Alto, Calif., Jan. 18, 1934, to Lorraine, daughter of Victor R. Larson of Lodi, an insurance man, and had four children: James Larson, Katherine Hutchins, Margaret Rose, and John Hutchins. Reuben P. Rott's death occurred in Woodbridge, Calif., Mar. 21, 1968.

DeWAN, Charles Henry, pathologist, was born in Herrickville, Bradford Co., Pa., Aug. 18, 1892, son of Patrick and Anna (McGovern) DeWan. His father, a farmer, came to this country from Ireland as a young man. Charles H. DeWan received his preliminary education at public schools in Camp-town, Pa., after which he attended Bloomsbury (Pa.) State College for a year and was graduated M.D. in 1917 at Jefferson Medical College, Philadelphia, Pa. He interned at Robert Packer Hospital, Sayre, Pa., in 1917-18, and from the latter year until the close of his life practiced his profession in Sayre. Continuing his association with Robert Packer Hospital, he became a member of the staff in 1918 and in the following year was named pathologist and head of the laboratories of the hospital's Guthrie Clinic, positions he held until the time of his death. He was also pathologist at the Tioga County General Hospital, Waverly, N.Y., and the Towanda (Pa.) Memorial Hospital, and from 1919 until his death he was company surgeon for the Lehigh Valley Railroad Co. He served for many years as deputy coroner of Bradford County. When DeWan assumed the post of head of the laboratory at Robert Packer Hospital, it occupied one room in the Guthrie Clinic building and employed one part-time assistant. Under his direction it expanded to almost an entire floor and